THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method of scalable multifunctional network communication between presentation devices and service providers, comprises:

providing a group of consumer premise equipment (CPE) units for coupling to the presentation devices;

receiving at a headend control computer, via an uplink channel, upstream messages from the CPE units and sending from the headend control computer, via a downlink channel downstream messages to the CPE units;

interfacing between the headend control computer and the service providers via a group of service provider control subsystems;

receiving transmission time interval requests via the uplink channel at the headend control computer from the CPE units or from the service providers;

collecting received requests for transmission time intervals on the uplink channel in a database and arranging at least some requests from the database in a request queue update message at the headend control computer;

sending the request queue update message via the downlink channel to at least some of the CPE units and processing the request queue update message to update a master request queue in the headend control computer and ~~in the same manner to~~ update ~~master queues used at the CPE units to place the requests from the request queue update message in~~ the local request queues at the CPE units;

detecting absent requests in the request queue update message by CPE units;

resending absent requests from CPE units;

the CPE units each receiving downlink messages addressed to it;

the CPE units each transmitting uplink messages when its own request arrives at the top of its request queue; and

wherein the headend control computer receives messages from the CPE units and transfers them to the service provider control subsystems, and the headend control computer receives messages from the service provider control subsystems and transports them to the CPE units.

2. (Previously Presented) A method according to claim 1, wherein the uplink and downlink messages include service messages bearing service data and control messages including data used to manage and, regulate network functions.

3. (Previously Presented) A method according to claim 2, wherein the intervals include an uplink Aloha slot burst interval serving to provide a plurality of message requests from the CPE units, said burst interval being schedules in a similar manner as other intervals by the headend control computer.

4. (Previously Presented) A method according to claim 3, further including generating requests at the CPE units and sending the request in a randomly selected Aloha time slot that is one of several such time slots available in an Aloha slot burst interval.

5. (Cancelled)

6. (Previously Presented) A method according to claim 4, further including receiving at the CPE units the request queue update message and adding it to their local request queues, and sending service and control messages from the CPE units to the headend control computer in response to the assigned time slots of the request queue.

7. (Previously Presented) A method according to claim 6, further including receiving at the headend control computer the service messages from the CPE units and in turn distributing them to the provider control subsystems and to headend network control circuitry.

8. (Previously Presented) A method according to claim 1, further including interconnecting each CPE unit and each presentation device via service interface modules.

9. (Previously Presented) A method according to claim 1, further including interconnecting service providers and the headend control computer via service control subsystems.

10. (Original) A method according to claim 1, further including sharing at least one channel using time division multiple access.

11. (Original) A method according to claim 1, further including modulating, transmitting, acquiring, tracking and demodulating signals on the uplink and downlink.

12. (Original) A method according to claim 1, further including tracking the phase of a master system clock via a local clock.

13. (Original) A method according to claim 12, wherein for clocks synchronization purposes, the uplink is locked to the downlink.

14. (Original) A method according to claim 8, further including acquiring and tracking interval boundaries on the downlink.

15. (Previously Presented) A method according to claim 1, wherein messages are carried in intervals, and at lease some include a message header.

16. (Previously Presented) A method according to claim 1, further including organizing and transmitting control messages.

17. (Original) A method according to claim 1, further including using message transmit queues and message receive queues in both the headend computer control and each CPE.

18. (Original) A method according to claim 1, further including using at least one request queue in each one of the CPEs and the headend computer control.

19. (Original) A method according to claim 1, further including monitoring the downlink for the purpose of selectively inputting messages intended for it by each CPE, and for the purpose of maintaining downlink synchronization.

20. (Original) A method according to claim 1, further including demodulating and decoding uplink messages via the headend computer control.

21. (Previously Presented) A method according to claim 1, further including using a receive router at the headend computer control for monitoring the received messages and routing them in accordance with their associated requests.

22. (Original) A method according to claim 1, further including using transmission schedulers in each CPE and the headend computer control for affecting transmission of messages.

23. (Original) A method according to claim 22, further including regulating the length and frequency of transmitted messages so that they are within desired range-of values by the transmission scheduler.

24. (Previously Presented) A method according to claim 6, further including collecting requests in pools and forming the request queue update message.

25. (Original) A method according to claim 24, further including receiving requests update messages and placing the messages contained therein in a request queue under the control of an insertion algorithm.

26. (Previously Presented) A method according to claim 1, wherein each CPE unit utilizes a request queue synchronization algorithm control application for determining that the CPE local request queue is identical to the master request queue at the headend computer.

27. (Previously Presented) A method according to claim 1, further including synchronizing the local request queue at the CPE unit with the master request queue at the headend computer by a request queue synchronization algorithm.

28. (Previously Presented) A method according to claim I, wherein a request insertion algorithm of a CPE unit is request synchronized, and establishes and maintains upstream message transmit times for a substantial number of upstream message intervals in the local request queue.

29. (Previously Presented) A method according to claim 1, further including registering each CPE unit, the registering including determining a CPE transmit time offset, the offset being the propagation time on the downlink between each CPE unit and the headend control computer.

30. (Original) A method according to claim 1, wherein each CPE contains a set of messages to be transmitted in a message transmit queue.

31. (Previously Presented) A method according to claim 1, further including selecting an upstream message for transmission by means of a transmission scheduler, and determining the order of upstream message selection for transmission based on characteristics of the upstream message.

32. (Previously Presented) A method according to claim 1, wherein each CPE includes a request transmission scheduler for selecting Aloha slots for transmission of a request message.

33. (Previously Presented) A method according to claim 32, wherein the request transmission scheduler determines that a request caused to be transmitted has suffered contention or disruption by noise, and thus is prevented from being successfully received by the headend computer control.

34. (Previously Presented) A method according to claim 1, further including generating requests for Aloha slot burst intervals by means of an Aloha slot supply algorithm in the headend control computer.

35. (Currently Amended) A system of scalable multifunctional network communication between presentation devices and service providers, comprises:

a group of service provider control subsystems;

a group of consumer premise equipment (CPE) units coupled to the presentation devices;

means for receiving at a headend control computer, via an uplink channel, upstream messages from the CPE units and sending from the headend control computer, via a downlink channel downstream messages to the CPE units;

means for interfacing between the headend control computer and the service providers via the group of service provider control subsystems;

means for receiving transmission time interval requests via the uplink channel at the headend control computer from the CPE units or from the service providers;

means for collecting received requests for transmission time intervals on the uplink channel in a database and arranging at least some requests from the database in a request queue update message at the headend control computer;

means for sending the request queue update message via the downlink channel to at least some of the CPE units and processing the request queue update message to update a master

request queue in the headend control computer and ~~in the same manner to~~ update ~~master queues used at the CPE, units to place the requests from the request queue update message in~~ the local request queues at the CPE units;

means for detecting absent requests in the request queue update message by CPE units;

means for resending absent requests from CPE units;

the CPE units each receiving downlink messages addressed to it;

the CPE units each transmitting uplink messages when its own request arrives at the top of its request queue; and

wherein the headend control computer receives messages from the CPE units and transfers them to the service provider control subsystem, and the headend control computer receives messages from the service provider control subsystems and transports them to the CPE units.

36. (Previously Presented) A system according to claim 35, wherein the messages include service messages bearing data and control messages used for network regulation including requests.

37. (Previously Presented) A system according to claim 36, wherein the requests include a plurality of message requests from the CPE units.

38. (Previously Presented) A system according to claim 37, further including means for receiving requests at the CPE units, means for forming request messages, and sending at least one of them in an Aloha time slot for sending at least one request message upstream to the headend control computer.

39. (Cancelled)

40. (Previously Presented) A system according to claim 38, further including means for receiving at the CPE units the request queue update message and adding the requests therein to their local request queues, and means for sending service messages or control messages from the CPE units to the headend control computer in response to the assigned time slots of the request queue.

41. (Previously Presented) A system according to claim 40, further including means for receiving at the headend control computer the service messages from the CPE units and in turn distributing them to the CPE units and service provider control subsystems and to the headend control circuitry.

42. (Previously Presented) A system according to claim 35, further including interconnecting each CPE unit and each presentation device via service interface modules.

43. (Previously Presented) A system according to claim 35, further including interconnecting service providers and the headend control computer via service provider control subsystem.

44. (Original) A system according to claim 35, further including means for sharing at least one channel using time division multiple access.

45. (Original) A system according to claim 35, further including means for modulating, transmitting, acquiring, tracking and demodulating signals on the uplink and downlink.

46. (Previously Presented) A system according to claim 35, further including a master clock in the headend control computer and a local clock in each CPE unit, wherein the local clock tracks the master system clock by tracking the rate of receipt of downlink data.

47. (Original) A system according to claim 46, further including means for locking the uplink to the downlink for clocks synchronization purposes.

48. (Original) A system according to claim 42, further including means for acquiring and tracking interval boundaries on the downlink.

49. (Previously Presented) A system according to claim 35, wherein messages are carried in slots.

50. (Previously Presented) A system according to claim 35, further including control applications for organizing and transmitting control messages to facilitating the establishment and regulation of network functions.

51. (Previously Presented) A system according to claim 35, further including means defining message transmit queues and message receive queues in both the headend control circuitry and each CPE unit.

52. (Original) A system according to claim 35, further including means defining at least one request queue in each one of the CPEs and the headend computer control.

53. (Original) A system according to claim 35, further including means for monitoring the downlink for the purpose of selectively inputting messages intended for it by each CPE, and for the purpose of maintaining downlink synchronization.

54. (Original) A system according to claim 35, further including demodulating and decoding uplink messages via the headend computer control.

55. (Original) A system according to claim 35, further including a receive router at the headend computer control for monitoring the received messages and routing them in accordance with their message headers.

56. (Previously Presented) A system according to claim 35, further including transmission schedulers in each CPE for affecting transmission of messages.

57. (Previously Presented) A system according to claim 56, further including means for regulating by the transmission scheduler the length and frequency of transmitted messages so that they are within desired range-of-values.

58. (Previously Presented) A system according to claim 40, further including means for collecting requests from CPE units on the uplink, from the headend control circuitry and from the service provider control subsystems, and forming the request queue update message.

59. (Previously Presented) A system according to claim 58, further including means for receiving requests update messages and placing the requests contained therein in a request queue under the control of an insertion algorithm.

60. (Previously Presented) A system according to claim 35, further including in each CPE unit includes means for utilizing a request synchronization algorithm control application for determining that the CPE unit's local request queue is identical to the master request queue for synchronization purposes.

61. (Original) A system according to claim 35, further including means for synchronizing the local request with the master request by a request synchronization algorithm.

62. (Previously Presented) A system according to claim 35, further including means defining a request insertion algorithm of a CPE is request synchronized, and establishes and maintains upstream control message transmit times for a substantial number of upstream control messages in the local request queue.

63. (Original) A system according to claim 35, further including means for registering each CPE, the registering including determining a CPE offset, the offset being the propagation time on the downlink between each CPE and the headend control computer.

64. (Original) A system according to claim 35, wherein each CPE contains a set of messages to be transmitted in a message transmit queue.

65. (Previously Presented) A system according to claim 35, further including means for selecting an upstream message for transmission by means of a transmission scheduler, and determining the order of upstream message selection for transmission.

66. (Original) A system according to claim 35, wherein each CPE includes a transmission scheduler for selecting Aloha slots for transmission of a request message.

67. (Original) A system according to claim 66, wherein the transmission scheduler determines that a request message caused to be transmitted has suffered contention, and thus is prevented from being successfully received by the headend computer control.

68. (Previously Presented) A system according to claim 35, further including means for generating interval requests for ASBIs by means of an Aloha slot supply algorithm in the headend control.

69. (Currently Amended) A headend unit for scalable multifunctional network communication between consumer premise equipment (CPE) units coupled between presentation devices and service control subsystems, comprises:

a headend control computer for receiving upstream messages from the CPE units via and for sending downstream messages to the CPE units via a downlink channel;

means for receiving at a headend control computer, via an uplink channel, upstream messages from the CPE units and sending from the headend control computer, via a downlink channel downstream messages to the CPE units;

means for collecting received requests for transmission time intervals on the uplink channel in a database and arranging at least some requests from the database in a request queue update message at the headend control computer;

means for receiving transmission time interval requests via the uplink channel at the headend control computer from the CPE units or from the service providers;

means for sending the request queue update message via the downlink channel to at least some of the CPE units and processing the request queue update message to update a master request queue in the headend control computer and ~~in the same manner to update master queues used at the CPE units to place the requests from the request queue update message in~~ the local request queues at the CPE units;

wherein the headend control computer receives messages from the CPE units and transports them to the service provider control subsystems, and the headend control computer receives messages from the service provider control systems and transports them to the CPE units.

70. (Original) A headend unit according to claim 69, wherein the messages include service messages bearing data and control messages in the form of request messages.

71. (Previously Presented) A headend unit according to claim 69, wherein the headend computer is coupled to a group of service interface modules.

72. (Previously Presented) A headend unit according to claim 69, further including means for receiving requests from the CPE units and arranging them in a request queue update message and sending it downstream to the CPE units.

73. (Currently Amended) A consumer premise equipment (CPE) unit for scalable multifunctional network communication between presentation devices and service providers via

a headend control computer coupled to the service providers through service provider control subsystems, comprises:

means for coupling to the presentation devices;

a transmitter for sending messages to the headend control computer upstream messages via an uplink channel where the uplink channel carries both control messages and data messages and a receiver for receiving from the headend control computer downstream messages via a downlink channel;

means including the transmitter for sending requests via the uplink channel to the headend control computer;

wherein the headend control computer collects received requests in a request queue update message;

a receiver for receiving the request queue update message via the downlink channel from the headend control computer;

means for detecting absent requests in the request queue update message;

means including the transmitter for resending absent request signals; and

wherein the headend control computer receives messages from the CPE and other like CPE units and transfers them to the service provider control subsystems, and the headend control computer receives messages from the service provider control subsystems and transports them to the CPE units.

74. (Previously Presented) A method according to claim 1, wherein the uplink channel and the downlink channel are the same channel.

75. (Previously Presented) A system according to claim 35, wherein the uplink channel and the downlink channel are the same channel.

76. (Previously Presented) A headend unit according to claim 69, wherein the uplink channel and the downlink channel are the same channel.

77. (Previously Presented) A CPE unit according to claim 73, wherein the uplink channel and the downlink channel are the same channel.